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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,924	07/24/2006	Minoru Senga	291923US0PCT	8237

22850 7590 02/01/2011  
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
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ECHELMAYER, ALIX ELIZABETH

ART UNIT	PAPER NUMBER
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1729

NOTIFICATION DATE	DELIVERY MODE
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02/01/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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jgardner@oblon.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,924	<b>Applicant(s)</b> SENGA ET AL.	
	<b>Examiner</b> Alix Elizabeth Echelmeyer	<b>Art Unit</b> 1729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 2-7,9,11 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,8,10,13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/24/10</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is in response to the amendment filed November 24, 2010. Claims 13 and 14 are added. Claims 2-7, 9, 11, and 12 were previously withdrawn. Claims 1, 8, 10, 13, and 14 are rejected finally for the reasons given below.

### ***Information Disclosure Statement***

2. The information disclosure statement filed November 24, 2010 has been considered.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Tatsumisago et al. ("New lithium ion conducting glass-ceramics prepared from mechanochemical  $\text{Li}_2\text{S-P}_2\text{S}_5$  glass").

Tatsumisago et al. teach solid-state lithium secondary batteries having electrolytes containing lithium, phosphorous, and sulfur (abstract; page 635 column 1).

Tatsumisago et al. teach the claimed diffraction peaks (Figure 6).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tatsumisago et al. as applied to claim 1 above, and further in view of Kugai et al. (US 2004/0005504).

The teachings of Tatsumisago et al. as discussed above are incorporated herein.

Kugai et al. teach that the relative amounts of lithium and phosphorous in a  $\text{Li}_2\text{S}$ - $\text{P}_2\text{S}_5$  glass is result effective ([0026]). Additionally, Kugai et al. teach a specific solid electrolyte having a composition of 70 mol%  $\text{Li}_2\text{S}$  and 30 mol%  $\text{P}_2\text{S}_5$  (Table 4).

It would have been obvious to the skilled artisan to use the relative amounts of Li and P taught by Kugai et al. in the glass of Tatsumisago et al. since Kugai et al. teach that, if the amount of Li is too high then the electrolyte can become porous and polycrystalline, while if the amount is too low, ionic conductivity and bond strength will be lowered.

Therefore, it would have been obvious to the skilled artisan at the time the invention was made to use the relative ratio of  $\text{Li}_2\text{S}$  and  $\text{P}_2\text{S}_5$  of Kugai et al. in the material of Tatsumisago et al. in order to optimize the properties of the material.

***Response to Arguments***

7. Applicant's arguments filed November 24, 2010 have been fully considered but they are not persuasive.

Applicant argues that Figure 6 of Tatsumisago et al. does not have diffraction peaks at  $2\theta = 21.8 \pm 0.3$  deg and  $23.8 \pm 0.3$  deg. The examiner disagrees. It is clear from the enlarged version of Fig. 6 provided by applicant that there are small peaks in the ranges claimed.

Applicant argues, on the top of page 6, that the claimed crystallized glass is not the same as the crystallized glass of Tatsumisago et al. because the composition of the glass of Tatsumisago et al. The examiner disagrees: claim 1 of the instantly filed invention requires only that the glass comprises lithium, sulfur, and phosphorous, but contains no further limitations to the composition of the glass.

As for Applicant's arguments concerning claims 13 and 14, such teachings are found to be obvious over Kugai et al. as discussed above.

Finally, on pages 6-7, Applicant states that the ion conductivity of an electrolyte having ratio of  $\text{Li}_2\text{S}$  and  $\text{P}_2\text{S}_5$  of 75 mol% to 25 mol% has highest conductivity; an electrolyte having ratio of  $\text{Li}_2\text{S}$  and  $\text{P}_2\text{S}_5$  of 80 mol% to 20 mol% has second highest conductivity; and an electrolyte having ratio of  $\text{Li}_2\text{S}$  and  $\text{P}_2\text{S}_5$  of 70 mol% to 30 mol% has third highest conductivity. The examiner notes that the first and second highest conductivities are found outside of Applicant's claimed range.

***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1729

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ula C Ruddock/  
Supervisory Patent Examiner  
Art Unit 1729

Alix Elizabeth Echelmeyer  
Examiner  
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aee